

What is claimed is:

1. A closed-loop washing system for removal and recovery of high solids contaminants from an object, the washing system comprising:

5 a support platform having a support surface adapted to support the object while a washing fluid is flowed over the object to remove the high solids contaminant;

a collection device in flow communication with the support surface, and adapted to collect and channel the run-off washing fluid and run-off high solids contaminant from the support surface towards a collection basin;

10 a high solids separation assembly in communication with the collection basin, and adapted to separate and displace the collected run-off high solids contaminant from a slurry of the collected run-off fluids and the collected run-off high solids contaminant in the collection basin to a discard region spaced-apart from said collection basin, while substantially maintaining the run-off washing fluid in said
15 collection basin; and

a clarifying reservoir in flow communication with the collection basin, and configured to hold the run-off fluid therein for reuse back to the washing system.

2. The closed-loop washing system as defined in claim 1, wherein
20 said separation assembly includes

a drag conveyor device having a separation station thereof immersed in the slurry of run-off washing fluid and high solids deposited in said collection basin and adapted to separate a portion of the deposited high solid contaminants from said slurry, and

25 a discarding station spaced-apart from and at a vertical elevation above the separation station, and adapted to discard the collected portion of the deposited high solid contaminants from the drag conveyor.

3. The closed-loop washing system as defined in claim 2, wherein

30 said drag conveyor includes a continuous chain member extending between the separation station and the discarding station, and having a plurality of drag weirs spaced-apart along said chain member, each said drag weir being adapted to separate and drag the portion of the deposited high solid contaminants at the separation station

and deposit the portion of the deposited high solid contaminants at the discarding station.

4. The closed-loop washing system as defined in claim 3, wherein

5 said drag conveyor includes a drive motor operably coupled to the chain member to drive said drag weirs between the separation station and the discarding station.

5. The closed-loop washing system as defined in claim 3, wherein

10 said discarding assembly includes a sleeve member substantially enclosing said chain member and drag weirs in a manner enabling the collected run-off fluid in said collection basin to filter between said sleeve and said drag weirs.

6. The closed-loop washing system as defined in claim 3, wherein

15 said collecting device includes an elongated receiving channel portion thereof in flow communication with said support surface, and a delivery portion in flow communication with the collection basin such that the run-off washing fluid and run-off high solids contaminant collected from the support surface are substantially flowed to the collection basin.

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7. The closed-loop washing system as defined in claim 6, wherein

said collecting device includes a transport device cooperating with the elongated channel to transport the high solids run-off collected in the channel toward the collection basin.

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8. The closed-loop washing system as defined in claim 7, wherein

said transport device further includes an auger member rotatably mounted and positioned in said channel in a manner causing the collected run-off washing fluid and run-off high solids contaminant to move along the elongated receiving channel to the
30 delivery portion thereof for delivery to the collection basin.

9. The closed-loop washing system as defined in claim 6, wherein

said elongated channel is positioned adjacent an edge of the support surface, and said support surface is shaped for gravity flow of the run-off washing fluid and run-off high solids contaminant toward said channel.

- 5 10. The closed-loop washing system as defined in claim 9, further including:
a flush assembly having one portion fluidly coupled to the clarifying reservoir and another portion fluidly coupled to one end of the elongated channel to flush the run-off fluid and high solids contaminant toward the delivery portion thereof.

- 10 11. The closed-loop washing system as defined in claim 1, wherein
said collecting device includes an elongated receiving channel in flow communication with said support surface, and a delivery portion in flow communication with the collection basin such that the run-off washing fluid and run-off high solids contaminant collected from the support surface is substantially flowed
15 to the collection basin.

12. The closed-loop washing system as defined in claim 11, wherein
said collecting device includes a transport device cooperating with the elongated channel to transport the high solids run-off collected in the channel toward
20 the collection basin.

13. The closed-loop washing system as defined in claim 12, wherein
said transport device further includes an auger member rotatably mounted and positioned in said receiving channel in a manner causing the collected run-off
25 washing fluid and run-off high solids contaminant to move from the elongated receiving channel to the delivery portion thereof for delivery to the collection basin.

14. The closed-loop washing system as defined in claim 11, wherein
said elongated channel is positioned adjacent an edge of the support surface,
30 and said support surface is shaped for gravity flow of the run-off washing fluid and run-off high solids contaminant toward said channel.

15. The closed-loop washing system as defined in claim 11, further including:

a high capacity fluid cannon coupled to the clarifying reservoir, and including a nozzle member and a fluid cannon pump device configured to eject the stored fluids at a capacity in the range of about 40 gal/min to about 80 gal/min.

5 16. The closed-loop washing system as defined in claim 15, wherein
 said cannon pump is configured to eject the stored fluid from said nozzle
 member in the range of about 50 gal/min.

10 17. The closed-loop washing system as defined in claim 1, wherein
 said clarifying reservoir includes a plurality of baffles aligned in a manner to
 encourage the deposition of light solids from said collected run-off fluids as it flows
 therethrough.

15 18. The closed-loop washing system as defined in claim 17, wherein
 said clarifying reservoir includes an over weir that defines a cleaner water
 chamber.

20 19. The closed-loop washing system as defined in claim 18, wherein
 said baffles are aligned in an array, and
 said cleaner water chamber is positioned at one end of said clarifying
 reservoir, and proximate one end of the array of baffles.

25 20. The closed-loop washing system as defined in claim 19, wherein
 said clarifying reservoir includes an inlet port positioned at an end opposite
 the cleaner water chamber.

30 21. The closed-loop washing system as defined in claim 20, further including:
 a sump pump coupled between the collection basin and the inlet port to pump
 the collected run-off fluid into said clarifying reservoir.

22. The closed-loop washing system as defined in claim 1, further including:
 a pressure washing assembly in flow communication with said clarifying
 reservoir.

23. The closed-loop washing system as defined in claim 1, further including:
a skimming device adapted to remove the contained lightweight liquid contaminants from said clarifying reservoir.

5 24. The closed-loop washing system as defined in claim 1, wherein
said support platform includes a peripheral frame assembly adapted to support
said support surface, said peripheral frame and said support surface forming an
interior cavity therein, and a high strength, low density material in said interior cavity
to support the object atop the support surface.

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25. The closed-loop washing system as defined in claim 24, wherein
said high strength, low density material includes foamed concrete.

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26. A high load capacity closed-loop washing system for the support of and
contaminant removal from a substantially heavy load object, the system comprising:

a support platform for supporting the heavy load object having a fluid
impervious upstanding peripheral side walls and a fluid impervious support surface
extending atop said peripheral side walls to collectively define an enclosed interior
cavity therein, said support platform including a flowable support material curable
20 into a relatively low density, high compressive strength material support enabling
vertical support the heavy load object atop said support surface while a washing fluid
is flowed over the object to remove the high solids contaminant;

a collection device in flow communication with the support surface, and
adapted to collect the slurry of run-off washing fluid and run-off high solids
25 contaminant from the support surface in a collection basin; and

a clarifying reservoir in flow communication with the collection basin, and
configured to store run-off fluid therein for reuse back to the washing system.

27. The closed-loop washing system as defined in claim 26, wherein
30 said high compressive strength material is provided by a high strength cellular
material.

28. The closed-loop washing system as defined in claim 26, wherein
said high compressive strength material is provided by foamed concrete.

29. The closed-loop washing system as defined in claim 26, further including:

a contaminant separation assembly in communication with the collection basin, and adapted to separate at least a portion of high solid contaminants from the slurry in the collection basin and discard the at least a portion of the high solids contaminants at a discarding location spaced-apart from said collection basin, while substantially maintaining the run-off washing fluid in said collection basin.

30. The closed-loop washing system as defined in claim 29, wherein

said separation assembly includes

a drag conveyor device having a separation station thereof immersed in the slurry of run-off washing fluid and high solids deposited in said collection basin and adapted to separate a portion of the deposited high solid contaminants from said slurry, and

a discarding station spaced-apart from and at a vertical elevation above the separation station, and adapted to discard the collected portion of the deposited high solid contaminants from the drag conveyor.

31. The closed-loop washing system as defined in claim 30, wherein

said drag conveyor includes a continuous chain member extending between the separation station and the discarding station, and having a plurality of drag weirs spaced-apart along said chain member, each said drag weir being adapted to separate and drag the portion of the deposited high solid contaminants at the separation station and deposit the portion of the deposited high solid contaminants at the discarding station.

32. The closed-loop washing system as defined in claim 31, wherein

said discarding assembly includes a sleeve member substantially enclosing said chain member and drag weirs in a manner enabling the collected run-off fluid in said collection basin to filter between said sleeve and said drag weirs.

33. The closed-loop washing system as defined in claim 26, wherein

said collecting device includes an elongated receiving channel in flow communication with said support surface, and a delivery portion in flow

communication with the collection basin such that the slurry of run-off washing fluid and run-off high solids contaminant collected from the support surface are substantially flowed to the collection basin.

- 5 34. The closed-loop washing system as defined in claim 26, wherein
 said collecting device further includes an auger member rotatably mounted
 and positioned in said channel in a manner causing the collected run-off washing fluid
 and run-off high solids contaminant to move from the elongated receiving channel to
 the delivery portion thereof for delivery to the collection basin.

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35. The closed-loop washing system as defined in claim 34, wherein
 said elongated channel is positioned adjacent an edge of the support surface,
 and said support surface is shaped for gravity flow of the run-off washing fluid and
 run-off high solids contaminant toward said channel.

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36. The closed-loop washing system as defined in claim 34, further including:
 a flush assembly having one portion fluidly coupled to the clarifying reservoir
 and another portion fluidly coupled to one end of the elongated channel to flush the
 run-off fluid and high solids contaminant toward the delivery portion thereof.

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37. The closed-loop washing system as defined in claim 26, further including:
 a high capacity fluid cannon coupled to the clarifying reservoir, and including
 a nozzle member and a fluid cannon pump device configured to eject the stored fluids
 at a capacity in the range of about 40 gal/min to about 80 gal/min.

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38. The closed-loop washing system as defined in claim 37, wherein
 said cannon pump is configured to eject the stored fluid from said nozzle
 member in the range of about 50 gal/min.

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39. The closed-loop washing system as defined in claim 26, wherein
 said clarifying reservoir includes a plurality of baffles aligned in a manner to
 encourage the deposition of light solids from said collected run-off fluids as it flows
 therethrough.

40. The closed-loop washing system as defined in claim 39, wherein said clarifying reservoir includes an over weir that defines a cleaner water chamber.
- 5 41. The closed-loop washing system as defined in claim 40, wherein said baffles are aligned in an array, and said cleaner water chamber is positioned at one end of said clarifying reservoir, and proximate one end of the array of baffles.